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By

HAROLD FLORIAN CLARK, Ph.D.
Associate Professor of Education, Indiana University

and

PAUL ROYALTY, A.M.
Culver Military Academy

Bureau of Coöperative Research, Indiana University School of Education
HENRY LESTER SMITH, Director

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I. INTRODUCTION

REALIZING that this study has not been so extensively pursued as it might have been, and realizing further that the source of material has not been the best and most complete, the authors nevertheless wish to advance and defend three propositions: (1) that public money should be saved whenever possible; (2) that seasonal fluctuations exist in the price of bonds and in interest rates; (3) that by planning school building programs so that seasonal fluctuations of high bond prices and low interest rates (which appear together) can be utilized, public money can be saved. They do not claim to have solved the problem for all districts or for any district, nor do they claim that the findings reported here are without error and the recommendations infallible. They only hope to interest school men in the possibilities of the problem which they have touched upon.

A review, however superficial, of the record of school bond sales for the country as a whole or for almost any part of it will reveal the fact that no scientific program of issuing is being pursued very generally. Bonds are offered on a "hit or miss" plan at any time of the year without regard to the condition of the money market. The practice of the best financiers does not set such an example. In his treasury report of the year ended June 30, 1925, Secretary Mellon writes:

"The Treasury knows with substantial accuracy how much of the debt should be retired each year and how much should be refunded, with a varying margin of possible retirement or refunding. It also knows how much of the debt ultimately should go into long-term bonds, and how much should be turned over in short-term obligations. The determination of the character of the securities to be issued depends, then, on the maturities which are desirable from the standpoint of the Treasury, and upon the cost of the different types of financing. This fixes the character of the issue, whether certificates of one year or less, notes up to five years, or bonds up to any maturity or a combination of any of these issues."

Writing further he says:

"The yields on outstanding Government securities move in harmony

with prevailing interest rates and are controlled by the same general forces.

. . . . . .

"The factors which the Treasury must take into consideration in floating a new issue of securities are practically the same as those which must be considered by an investment banker in floating new issues for his clients. All Government offerings are made on a strict investment basis. The Treasury always aims to sell its securities at the lowest possible interest rate consistent with their successful distribution among investors, and, with this in view, it always gives close attention and consideration to the market quotations on outstanding securities and to prevailing money-market conditions in connection with the determining of the amount and terms of these issues. The Treasury wishes to secure the lowest rate that the market will offer."

In other words, the Treasury Department watches the money markets, studies the influencing factors, and anticipates the movements. Then if money is needed and conditions are not favorable for issuing long-time paper, the department borrows the amount needed for the length of time it expects to elapse before a favorable time.

Smaller businesses in all probability do the same thing; there is no reason why the school man should not. How successful he may be—what he may be able to save of the public money, remains to be seen. This study has attempted to raise a few questions and to make a few suggestions for his consideration and use.

II. RELATION OF BOND PRICES TO MONEY RATES

For many years it has been the practice of officials in business corporations and other organizations to issue bonds in order to finance building and improvement programs or to meet one of many other possible needs. In some cases it is perfectly justifiable and business-like, the only way, indeed, in which the business or organization can carry on its plans. School men have found the bond method of raising money a convenient one, and are at present, as they have been in the past, employing it extensively. Whether, in their case, the plan is the best one, or whether a "pay as you go" plan, either by accumulating a fund in advance or by a single direct tax, is more advisable, is a much debated question. In any case it seems certain that school bonds will continue to be issued for some time to come, and it is certainly desirable and imperative, when the amount of money involved is considered, that the soundest business methods and the most scientific information should be made available to guide those into whose hands the community has delegated the disposal of its bonds.

Some excellent studies have been made of school bonds (justification for their issuance, state laws concerning limitations of school bonded indebtedness, manner of issuance, best method of payment, etc.)[1]

[1] *School Bonds* by John Guy Fowlkes is perhaps the most complete.

that should prove of very great aid to school men, who, generally speaking, are not specialists in business and finance, in issuing and disposing of their bonds in at least a legal manner.

This is a step, a big step—one that is significant and in the right direction. *The Public* is a very real and potent personage, yet an intangible one. Everyone knows about him, especially his business, but nobody knows just who he is. The public can never learn to manage its gigantic business; it must be constantly guided; its problems must be solved by individuals. In the matter of school bonds and other public securities, it is possible that the men who are best informed, the experts of the bonding houses and the investment companies, would not find it to their advantage to secure and disseminate certain information that the public sorely needs to know. That is, information that will enable the school man to dispose of bonds at higher prices and lower interest rates will not prove a desirable thing from the standpoint of the investor. But, on the other hand, information that will enable the school man to issue bonds at a time when money hangs heavy, so to speak, on the hands of the investor, at a time when the market is not crowded by other business—such information might prove of interest and value to all parties concerned. In any case there is no reason why the school man should not look out for his own interests and there is no reason why he cannot better do so if he will but try. We have seen how Secretary Mellon, one of the keenest financiers in the country, carefully selects periods of low interest rates and slack business to issue government bonds, knowing that even they must compete in the open market and knowing also that the less the competition is the better are the terms.

It is a well known fact in the business world that bond values are very definitely affected by any change in money prices, the bond prices usually anticipating the changes, either up or down, in money costs. Indeed it has been a custom to compute seasonal and period variations in the value of money by a study of the fluctuations of certain seasoned, reputable bonds. That is, when money rates are low, bond prices are high, and when money rates are high, bond prices are low. Men who have made a success of handling money know that no considerable amount must be permitted to lie idle for any length of time. Consequently when there is a surplus of money on the market there is a scramble for reasonably safe investments that can be readily converted into cash again. Marketable bonds are, in almost any case, the best "buy," and very soon high class bonds can be bought only at a premium. If, on the other hand, some condition, local or general, makes money hard to get, interest rates rise rapidly, and bonds, being less slow to advance and less likely to reach the high earning capacity of cash, are in no demand and are in consequence cheap and may go begging at any price.

About the same thing may be said of new bond issues. While seasoned bonds are generally considered a better investment than new issues, any governmental bonds, especially those of school districts, are usually considered a very safe investment. That is, of course, because

of the reputation of the organization, in this case society itself, behind the issue. So, when money is plentiful and cheap, bonds may be issued, other things being equal, at a premium and at a low rate of interest.

The next problem then, assuming without proof for a time that the above is true, is to find, if possible, the period and extent of the money variations. Without doubt there are broad seasonal swings that may be anticipated rather safely and accurately—changes that affect the country as a whole. Of course the extent of variations differs for different parts of the country, depending on local conditions such as climate, kind of season, industries, etc., but the demands on the market are sometimes so heavy that the entire country feels it. There are also other influencing factors. New York exchanges handle more money than all the others, the country over, combined. Then such things as regular periodic settlement dates and holiday demands come upon all parts of the country at the same time.

W. E. Lagerquist, summarizing the report of the National Monetary Commission,[2] writes in his Investment Analysis[3] (1921):

"The former inelasticity of the United States currency system, which has so frequently been criticized, forced a recurring seasonal fluctuation in the demand for money, hence a corresponding change in prices. While the seasonal fluctuations vary with the different sections of the country, the fluctuations in the New York money market are the most essential ones to study in relation to investments. However, with the ultimate readjustments that will probably take place under the Federal Reserve System, the seasonal difficulties ought to be greatly reduced.

"The best seasonal indicators of the New York money market are those items which are most responsive to quick changes, namely, call loan rates, very short time loan rates, and the ratios of reserves to deposits. Time loans and bank clearings, according to Professor E. W. Kemmerer, while less susceptible to minor influences, mark more accurately the broad swings of the market, but they are unsafe indicators as to the beginning and ending of the seasonal swings. The reader should always be careful in his study of the items just stated not to confuse their seasonal movements with the movements primarily based on the contraction and expansion of credit over a long period. The tendency in the decrease or increase of interest rates and ratios of loans to deposits and of reserves to deposits in the long-period movements can usually be anticipated, but they are not regular in occurrence; their seasonal movements, on the other hand, are fairly constant in repetition, but do not anticipate coming changes of an enduring character in the market. However, if overexpanded credit has accumulated over a 'long-period swing,' and exists during the autumnal seasonal swing, the strain is greatly intensified.

"As further pointed out in Kemmerer's Congressional report in discussing the seasonal swing of the calendar year, there is a decided easing of the money market in January, which extends into February, usually making a 'cheap money' market at the end of January and

[2] Senate Documents, 61st Congress, 2d session.
[3] Lagerquist, Walter E., *Investment Analysis*, pp. 186-88.

the beginning of February. The reasons for this first movement are: the subsidence of crop-moving demand and the consequent return of cash to New York, the relatively small amount of freight traffic and the large amount of exports in January. The second seasonal swing usually begins somewhere between the middle and the last of February and extends into April. This second upward movement can be chiefly attributed to the demand for cash for spring planting, the renewed building activity, the payments of obligations and interest and a minor movement of cash payments to New England manufacturers. The third seasonal swing extends from the close of this former period to the middle of June or early July and is due to the influence of foreign trade, the decline in money rates and the movement of money to New York and the discount in trading made in anticipation of the fall demands. The fourth movement, marked by the first crop movements, is anticipated by an upward swing of call rates and a lowering of bank reserves and an increase of the ratio of loans to deposits. This period proceeds into a fifth movement which is largely a continuation of the fourth, but with a more decided upward trend about October first, which continues well toward the end of the year. The chief cause of this last movement is the demand for cash to move the crops and is sustained by the trade activity of the holidays . . . . . .

" 'The season effect on bond prices does not cause them to move consistently, or regularly. Also, individual prices may not fluctuate very much, but collectively for the year these fluctuations extend into millions. Bond prices tend to increase in January under the stimulus of an easy money market and to decline quite steadily till the climax of the second swing. With the beginning of the second weak seasonal market, bond prices normally rise to their highest point in early summer. From the first of June until the first of September, bond prices normally take their first pronounced downward move and continue even more steadily until the middle of November, when they tend to move upward following an unsteady advance during December.' "

Chamberlain,[4] writing on the relation of bond prices to the condition of credit, says:

"As related to bond prices, the argument of the business cycle amounts to this: the prices of current, high grade, listed bonds (and of other bonds in their degree) depend on the condition of general credit. The proof of it is strikingly evident in Chart XVI, which shows that the average price of the ten bonds with which we have been dealing varies inversely as the ratio of loans to deposits in the national banks of the United states. This statement may seem difficult of understanding at first, but the fact is very simple.

"The national banks of the country are the clearing-houses of commercial and personal credit. Loans represent the demand for, and deposits represent the supply of general credit. The ratio of loans to deposits, therefore, is the ratio of the demand for to the supply of credit; it is the index of the condition of credit. High ratio means necessity

[4] Chamberlain, Lawrence, *The Principles of Bond Investment*, pp. 482-84.

for liquidation by borrowers; low ratio, power for accumulation. These statements hold in spite of the fact, already noted, that the shifting of a bank's customers from the credit to the debit position may be accomplished without corresponding bookkeeping loss in the item of deposits. The weakened position may show more in the loans.

"When borrowers must liquidate, the prices of all things purchasable that have a national market must fall. The fall may be delayed so long that the cause is obscured; but sooner or later it must come. Therefore, a high ratio of loans to deposits means low prices for bonds, stocks, and commodities in general; and the effect of high prices is usually felt in this order for reasons outlined in the pages immediately preceding.

"But bond prices have a much more intimate relation to credit than do either stock or commodity prices. Bonds, themselves, are credit instruments for loans, and such bonds as are chosen for grapic study here are long-term credit instruments. High grade as they are, and listed, and fairly active on the principal exchanges, they respond quickly to alterations in the condition of credit; their movements are less hampered by extraneous circumstances, are little affected by fears for the safety of interest, or principal at maturity.

"The financing of the bond business, and of bond speculation in general, is another aspect of the same relationship between prices and credit. When credit is cheap, bonds may be bought and carried on loans that will cost less than the income or interest from the bonds. Bonds will therefore be in demand for the sake of this difference and the logical appreciation which this difference should cause in the long run. When there is no profit in thus carrying bonds, speculative holdings will be liquidated and bond prices will fall."

As stated before, there are local conditions that must be considered —these in fact may prove the most important influences—but it must be borne in mind that New York markets are widely felt and that the small companies, banks, etc. very rarely indeed take up bond issues.[5] Nevertheless, specific studies for each district must be made before anything like accurate information can be furnished concerning the time to sell school bonds in that district. The condition of industries, building and other booms, climate and crop planting, harvesting, and moving are factors which may greatly affect the supply and consequently the price of money. In this as in every other case, each community must face its own peculiar problems in addition to and regardless of general nation-wide conditions.

[5] School men in Indiana say that local banks do not bid on their bonds, and statistics show that in most cases they are bought by the large companies of Indianapolis, Chicago, Cincinnati, and other neighboring cities.

III. POSSIBLE SAVINGS FROM SELLING BONDS WHEN MONEY IS PLENTIFUL

The question arises now as to the actual savings that may be affected by a widespread program of careful selling. It is possible that the small school which does not have extensive building plans will not consider the savings of sufficient amount to warrant careful sales planning or a change in building plans. School men say with reason: "We must build when we can get enough enthusiasm aroused to support our programs." And even in the large cities the same difficulties are found, caused by political muddles and a variety of other things. In anticipation of such objections and the more frequent one that it is not profitable to sell when the market is favorable only to hold the money idle until time for its use, this answer is given: It is not a case of waiting or accelerating six months, or even two months, it is a matter of days. Two weeks may make a great difference if the issue is at all large and extends, as it usually does, over a period of from ten to fifty years. Besides, the example of the United States Treasury Department may be followed, money being borrowed for a short period until the time is ripe for issuing long-term bonds. The problem is certainly worth figuring on whatever the size of the issue or the length of time over which it is to run. Large cities that have a dependable and continuing program of building and repairing should be especially interested in studying market conditions before their bonds are offered.

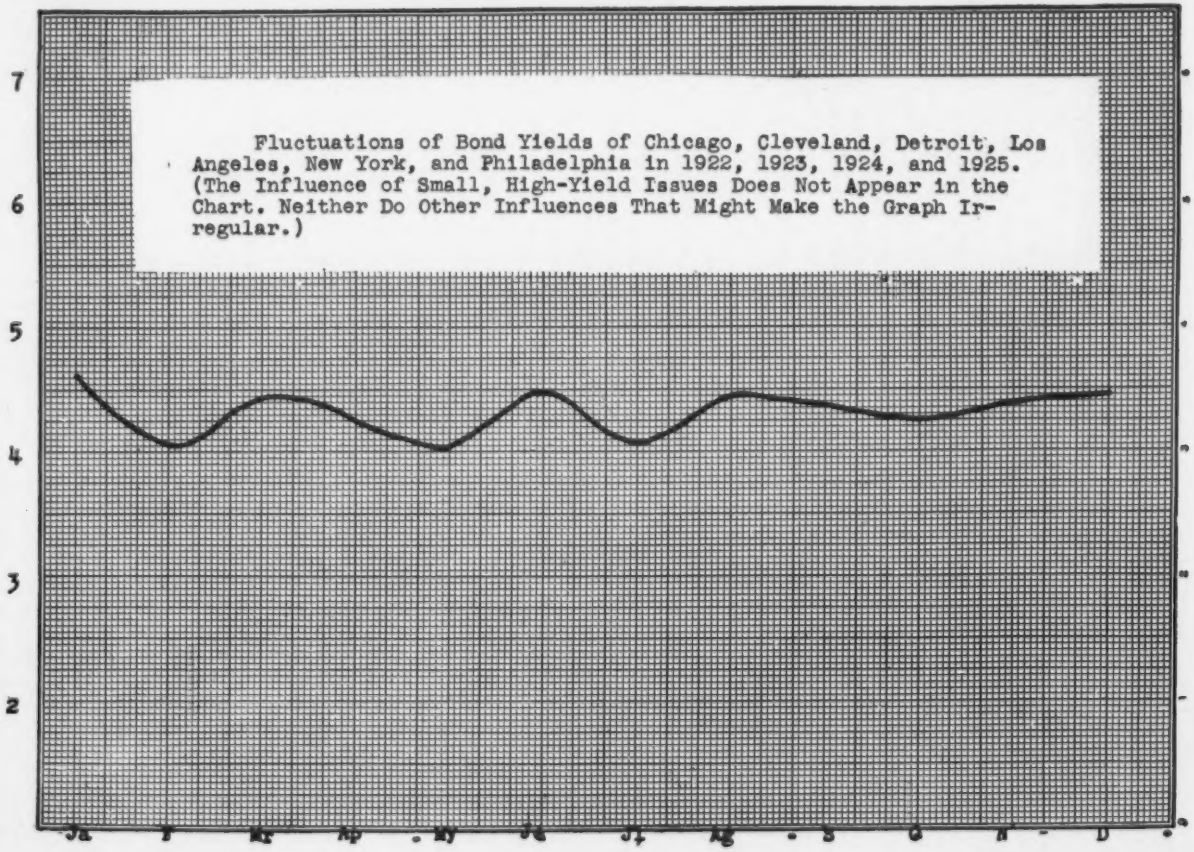
The following figures may serve as an indication of what a very small per cent saving may mean to the country as a whole:

An average yield basis of all bonds reported sold in Chicago, Cleveland, Detroit, Los Angeles, and Philadelphia, for the years, 1921, 1922, 1923, 1924, and 1925 show these results by months.

Average Bond Yields of Chicago, Cleveland, Detroit, Los Angeles, and Philadelphia in 1922, 1923, 1924, 1925 (split months)[6]

January	4.592
February	4.043
March	4.403
April	4.213
May	4.032
June	4.40
July	4.079
August	4.435
September	4.385
October	4.235
November	4.393
December	4.432

[6] From December 15 to January 15, etc. This is especially important for these two months and is significant for certain other periods, as settlement dates usually come at the first of a month, causing high money rates a few days before and after.

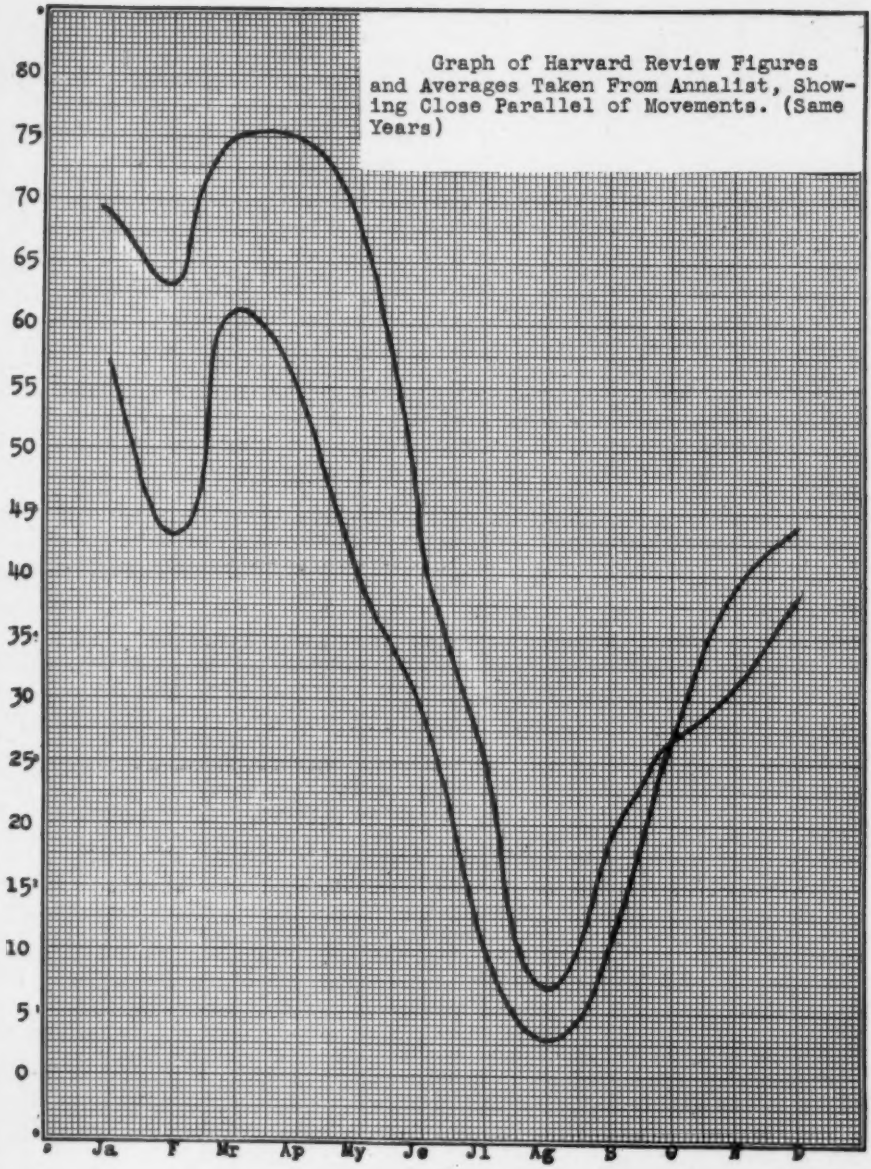


Fluctuations of Bond Yields of Chicago, Cleveland, Detroit, Los Angeles, New York, and Philadelphia in 1922, 1923, 1924, and 1925. (The Influence of Small, High-Yield Issues Does Not Appear in the Chart. Neither Do Other Influences That Might Make the Graph Irregular.)

The difference in monthly rates and monthly yield is not large, but on the school bonds outstanding in the United States the difference will amount to millions of dollars. A conservative estimate of the school bonds outstanding at the present time is $3,000,000,000. If these bonds were issued in January the annual interest charge would be $9,600,000 more than the interest charge if they were issued at the average rate thruout the rest of the year. The difference between the January rate and the rate of the low month is only slightly over ½ of one per cent (our present incomplete figures show it to be approximately that) and might seem to be trivial, but the interest differences on the school bonds outstanding would amount to $15,000,000 per year.

Seasonal Variations in the Relative Demand for Moneyed Capital as Evidenced by Interest Rates, Call Loans, New York Stock Exchange. Average Figures for Years 1890-1908 (Senate Documents, 61st Congress, 2d Session, 1909-1910)

Month	Week	Average Rate
January	1	6.42
	2	3.62
	3	2.84
	4	2.50
February	5	2.45
	6	2.39
	7	2 54
	8	2.70
March	9	2.97
	10	3.58
	11	3.85
	12	3.24
April	13	3.62
	14	4.00
	15	3.78
	16	3.03
	17	2.94
May	18	3.37
	19	3.47
	20	2.64
	21	2.44
June	22	2.28
	23	2.31
	24	2.41
	25	2.51
July	26	3.56
	27	3.43
	28	2.92
	29	2.30
	30	2.37
August	31	2.45
	32	2.54
	33	2.64
	34	3.66
September	35	3.04
	36	4.13
	37	4.16
	38	4.33
	39	4.23
October	40	4.48
	41	3 97
	42	3.56
	43	6.53
November	44	7.08
	45	5.44
	46	4.80
	47	4.25
December	48	3.95
	49	4.85
	50	5.49
	51	6.64
	52	7.38



Graph of Harvard Review Figures and Averages Taken From Annalist, Showing Close Parallel of Movements. (Same Years)

Total Money Index for 1922, 1923, 1924, 1925. *Harvard Review of Economic Statistics*, January, 1926 (split months)

January	4.52
February	4.44
March	4.56
April	4.63
May	4.46
June	4.27
July	4.08
August	4.04
September	4.15
October	4.31
November	4.38
December	4.45

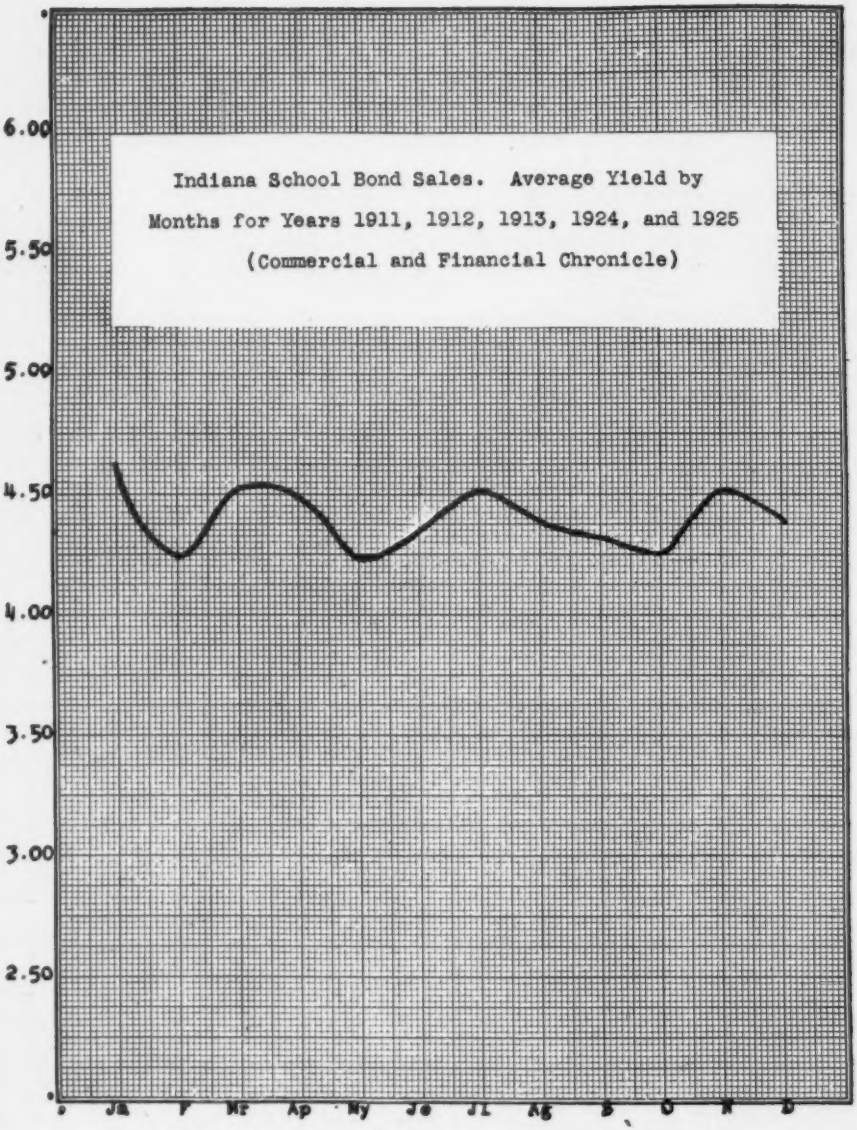
Indiana School Bond Sales. Average Yield by Months for Years 1911, 1912, 1913, 1924, and 1925

January	4.639
February	4.294
March	4.533
April	4.493
May	4.236
June	4.352
July	4.534
August	4.362
September	4.336
October	4.257
November	4.538
December	4.398

IV. PRACTICAL CONSIDERATIONS AND CONCLUSIONS

No one realizes better than the authors of the study that it may not be possible to realize the full amount of the theoretical saving. There are administrative difficulties that at times might prevent bonds being issued at a low date period. On the other hand, if detailed information were available in regard to the best time to issue bonds in different types of communities the total saving would probably be much larger than the averages here show. This is true because averaging together different types of communities tends to reduce the difference that would otherwise appear. The date on which bonds of an agricultural community will sell best may not be the date on which bonds of an industrial community will sell highest.

The purpose of this study is not to determine finally the best date to issue school bonds but to point out that there is a problem of de-


Indiana School Bond Sales. Average Yield by
Months for Years 1911, 1912, 1913, 1924, and 1925
(Commercial and Financial Chronicle)
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
Ja
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termining the best time to issue school bonds. One time is not as good as another. This study points out periods in which bonds should not be issued in the average community. Detailed study should be made of particular types of communities to determine the best date in any particular kind of community.

The final question is, of course, when should and when should not the school man issue bonds. As yet there is no very satisfactory answer, and there will probably never be an answer fitting all cases; there are too many contributing factors. But in general it seems safe to say that bonds should not be issued in the month from the middle of December to the middle of January.

There are also other periods in which it would seem advisable not to sell in normal times. These are, as suggested earlier in the quotation from Lagerquist, in the early spring from near the middle of February until some time in April, and during the period of steady rise from September or October on thru till the end of the year. The months May, June, July, and August are, together with the low period from the middle of January to the middle of February, other things being equal again, the most advisable time to sell school bonds. The question of the more or less regularly recurring, long period swings has not been considered and will be only mentioned here. It is sufficient to say that the influence of these movements can and must be discounted or at least considered if the prices are to be anticipated.

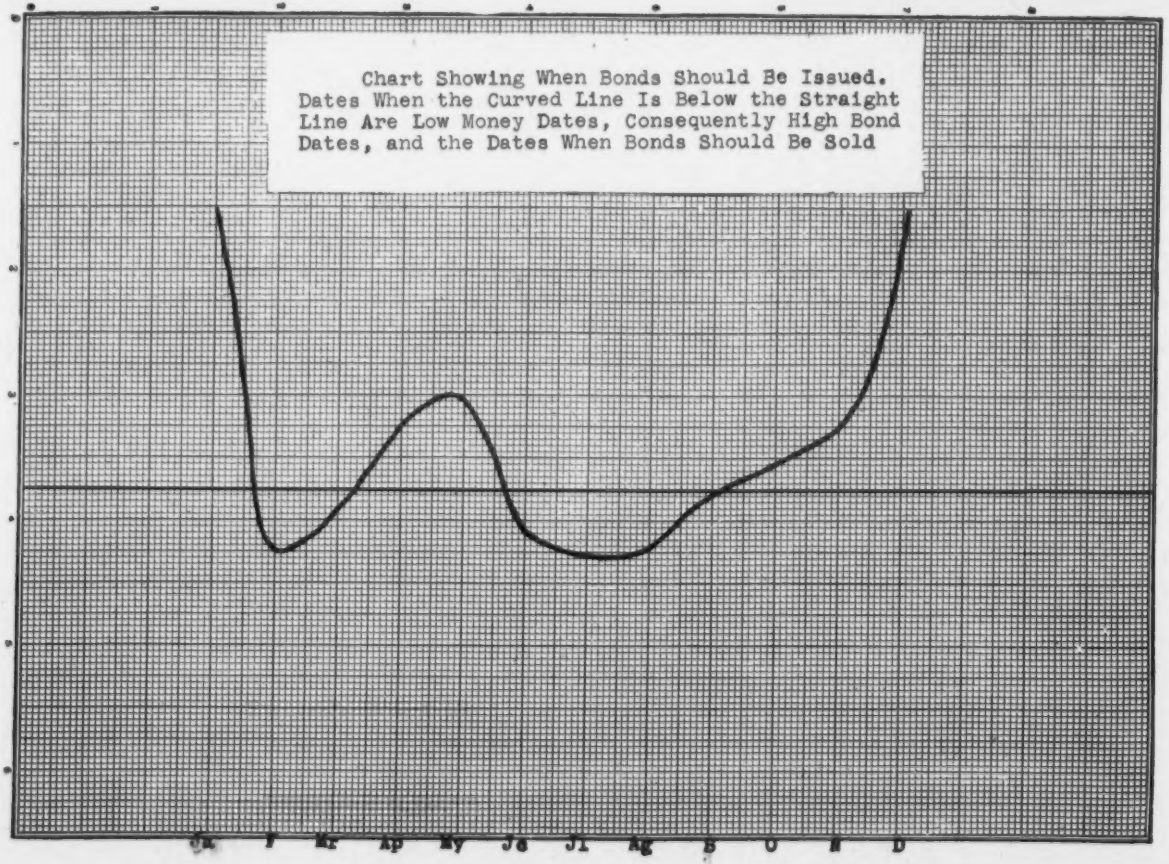
Chart Showing When Bonds Should Be Issued.
Dates When the Curved Line Is Below the Straight
Line Are Low Money Dates, Consequently High Bond
Dates, and the Dates When Bonds Should Be Sold
Ja
F
Mr
Ap
My
Je
Jl
Ag
S
O
N
D